

## Properties of vanadium–doped GaAs grown by MOVPE

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The electrical and optical properties of vanadium–doped GaAs grown by metalorganic vapour phase epitaxy using vanadium tetrachloride were examined. The only deep level detected in the un–doped GaAs is EL2, which is shown to disappear after V doping. The disappearance of the EL2 is explained by a reaction involving V and EL2 arsenic antisite. V–doping creates an electron trap E1 at 0.14 eV below the conduction band and a broad band E2 of electron traps. Photoluminescence spectra of V doped GaAs exhibited three new emissions bands: at 1.41, 1 and 0.72 eV. The 1 and 0.72 eV bands were the characteristics of the  $V^{2+}$  and  $V^{3+}$  intracenter emissions. The 1.41 eV band was tentatively attributed to a complex associating V to intrinsic defects introduced by the growth conditions.